Juan Muneton Gallego

☐ (401)588-0102 | @ muneton.juand@gmail.com | in LinkedIn | ⭕ GitHub | 🌐 Portfolio |

EDUCATION

Stanford University   Palo Alto, CA
M.S Computational Mathematics and Engineering;   *Sep 2023 – May 2025*

Brown University   Providence, RI
B.S Mathematical Statistics; GPA: 3.6 (Honors)   *Sep 2017 – May 2021*

WORK EXPERIENCE

Adobe Inc.   Austin, TX
Software Engineer Intern   *June 2023 – Sep 2023*

- Developed effective prompts for diverse AI tasks and maintained a high standard of prompt quality and consistency across different competencies, adhering to established guidelines and best practices.
- Reviewed, validated, and scored the AI assistant's responses to ensure they align with intended AI assistant behaviors and the AI assistant produces accurate and contextually appropriate responses to given prompts.
- Engaged in collaborative meetings with cross-functional teams and project coordinators, actively seeking guidance, addressing queries, and collectively brainstorming strategies to generate higher quality prompts.

R-Dex Systems Inc.   Atlanta, GA
Machine Learning Engineer II   *June 2022 – June 2023*

- Built a background registration-based adaptive noise filtering system with robust principal component analysis via augmented Lagrange multipliers and Lucas-Kanade optical flow algorithm for image analysis
- Built a complex-valued module for generalized deep neural network architecture design
- Implemented a transfer learning framework 'learning without forgetting' to increase model generalizability and training flexibility
- Implemented neural network architectures with multi-frequency decomposition based on the Fast Fourier transform for temporal series classification of signal-based data
- Investigated and implemented an intra-layer and class separability analysis of neural networks with the Henze Penrose statistic

R-Dex Systems Inc.   Atlanta, GA
Machine Learning Engineer I   *June 2021 – June 2022*

- Built a probabilistic Jacobian-based saliency map adversarial attack able to perform stochastic approximations for optimal pixel perturbation in large-dimensional datasets
- Collaborated in the implementation of a transfer learning framework 'learning without forgetting' to increase model generalizability and training flexibility
- Implemented a Jacobian-based data set augmentation to simulate black box attack modeling in Tensorflow
- Designed a data pipeline to identify data distribution shifts in datasets with autoencoders, PCA, and ICA
- Engineered variational autoencoders in Tensorflow and Pytorch to compute distributional distances with the Kolomogorov- Smirnov test, maximum mean discrepancy test, and Bures Wasserstein distance
- Designed Bayesian convolutional neural networks to improve classification accuracy in hybrid and SOTA models

Nasdaq Machine Intelligence Lab   Boston, MA
Data Science Intern   *May 2020 – Aug 2020*

- Created and validated unsupervised clustering methods for optimizing financial time series portfolios, utilizing Scikit-Learn and incorporating in-house customizations for enhanced performance
- Participated in the collaborative development and testing of automated Tensorboard visualizations, enabling real-time monitoring of agent training and evaluation on AWS EC2 instances.
- Integrated cluster embeddings into a temporal convolution neural network time series predictive framework
- Developed modules for error analysis and metrics, leveraging techniques such as multiple regression, statistical hypothesis testing, and clustering metrics.

Research Experience

School of Public Health at Brown University   Providence, RI
Undergraduate Researcher   *Aug 2020 – May 2021*
- Honors Thesis: An Evaluation of Machine Learning Tools to Predict Survival Analysis in Patients Diagnosed with Breast Cancer: A Complete Case Analysis. Thesis Advisor: Jon Steingrimsson
- Implemented Cox Regression Models, Support Vector Machines, Gradient Boosting Algorithms, and a Cox Neural Network model to compare accuracy in survival prediction

New York University Center for Neural Science   New York, NY
Undergraduate Researcher   *May 2019 – Aug 2019*
- Implemented data-driven and scientific methods to identify biomarkers of neural activity from EEG recordings. Analytical tools used: Independent Component Analysis (ICA), Power and Fourier Analysis, and Wavelet-Length Analysis

CLPS Department at Brown University   Providence, RI
Undergraduate Researcher   *Aug 2018 – Oct 2019*
- Curated EEG-signal data from Parkinson's Disease research study on cognitive control and reward prediction

Awards & Achievements

(2023) GEM Fellowship: Full-ride fellowship to attend a master's program at Stanford University

(2023) Hispanic Scholarship Fund: Named Hispanic Scholar through the HSF fund

(2023) SMART Scholarship (US Department of Defense): Scholarship recipient under the Defense Intelligence Agency to attend a STEM graduate-level program (declined)

(2023) Amazon MS Fellowship at Columbia Engineering: A full-tuition fellowship to attend Columbia University for a master's program. In addition, an internship offer at Amazon (declined)

(2021) Departmental Honors in Statistics: Awarded to undergraduate students pursuing an honors thesis and remaining in high academic standing

(2020) (2020) Sprint LINK Award at Brown University: Funded award to participate in the development of course material for teaching Data Science at Brown

(2017) Sydney Frank Scholarship: a four-year tuition award to attend Brown University

Projects

Filters and Fractals | *GitHub*
- A C project which implements a variety of image processing operations that manipulate the size, filter, brightness, contrast, saturation, and other properties of PPM images from scratch.
- Added recursive fractal generation functions to model popular fractals including Mandelbrot set, Julia set, Koch curve, Barnsley fern, and Sierpinski triangle in PPM format.

Chess Bot | *GitHub*
- A C++ project in which you can play chess against an AI with a specified decision tree depth that uses alpha-beta pruning algorithm to predict the optimal move.
- Aside from basic moves, this mini chess engine also implements chess rules such as castling, en passant, fifty-move rule, threefold repetition, and pawn promotion.

CMPE 250 Projects | *GitHub*
- Five Java projects assigned for the Data Structures and Algorithms (CMPE 250) course in the Fall 2021-22 semester.
- These projects apply DS&A concepts such as discrete-event simulation (DES) using priority queues, Dijkstra's shortest path algorithm, Prim's algorithm to find the minimum spanning tree (MST), Dinic's algorithm for maximum flow problems, and weighted job scheduling with dynamic programming to real-world problems.

Skills

Programming: Python, C++, JavaScript, MATLAB, R, SQL, MySQL

Technologies: Git, Docker, OpenCV, Pytorch, Tensorflow, Numba, scikit-learn, Linux ISE, Spark, CUDA

Mathematical Skills: Real Analysis, Complex Analysis, Numerical Linear Algebra, Probability, Mathematical Statistics, Manifolds

Languages: English and Spanish

Relevant Coursework

Graduate Relevant coursework: Numerical Linear Algebra, Decision Making Under Uncertainty, Real Analysis

Undergraduate Relevant coursework: Data Structures and Algorithms, Statistical Learning, Deep Learning, Machine Learning, Probability Theory, Stochastic Optimization, Linear Optimization, Linear Algebra, Scientific Computing, Inference, Multivariate Calculus, Regression Analysis and Linear Models